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#2

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/812,502

DATE: 01/25/2002

TIME: 16:59:17

Input Set : N:\Crf3\RULE60\09812502.raw

Output Set: N:\CRF3\01252002\I812502.raw

1 <110> APPLICANT: Anderson, Marilyn A.
 2 Atkinson, Angela H.
 3 Heath, Robyn L.
 4 Clarke, Adrienne E.
 5 <120> TITLE OF INVENTION: PROTEINASE INHIBITOR, PRECURSOR THEREOF AND GENETIC
 6 SEQUENCES ENCODING SAME
 7 <130> FILE REFERENCE: 9748B
 8 <140> CURRENT APPLICATION NUMBER: 09/812,502
 9 <141> CURRENT FILING DATE: 2001-03-20
 11 <150> PRIOR APPLICATION NUMBER: US/09/431,500
 12 <151> PRIOR FILING DATE: 1999-11-01
 15 <150> PRIOR APPLICATION NUMBER: 08/454,295
 16 <151> PRIOR FILING DATE: 1995-09-01
 17 <160> NUMBER OF SEQ ID NOS: 16
 18 <170> SOFTWARE: PatentIn Ver. 2.1
 20 <210> SEQ ID NO: 1
 21 <211> LENGTH: 1104
 22 <212> TYPE: DNA
 23 <213> ORGANISM: Nicotiana alata
 24 <400> SEQUENCE: 1
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 27 ttcagtgatg atggaacttt tgtttgtgaa ggagagtctg atcctagaaa tccaaaggct 180
 28 tgtaccttaa actgtgatcc aagaattgcc tatggagttt gcccgcgttc agaagaaaag 240
 29 aagaatgatc ggatatgcac caactgttgc gcaggcacga agggttgtaa gtacttcagt 300
 30 gatgatggaa cttttgtttg tgaaggagag tctgaccta gaaatccaaa ggcttgcct 360
 31 cggaattgcy atccaagaat tgcctatggg atttgccac ttgcagaaga aaagaagaat 420
 32 gatcggatat gcaccaactg ttgcgcaggc aaaaagggtt gtaagtactt tagtgatgat 480
 33 ggaacttttg tttgtgaagg agagtctgat cctaaaaatc caaaggcctg tcctcggaat 540
 34 tgtgatggaa gaattgccta tgggatttgc ccactttcag aagaaaagaa gaatgatcgg 600
 35 atatgcacca actgctgcgc aggcacaaaag ggttgtaagt actttagtga tgatggaact 660
 36 tttgtttgtg aaggagagtc tgatcctaaa aatccaaagg cttgtcctcg gaattgtgat 720
 37 ggaagaattg cctatgggat ttgccactt tcagaagaaa agaagaatga tcggatatgc 780
 38 acaaaactgtt gcgcaggcaa aaagggtgtt aagtacttta gtgatgatgg aacttttgtt 840
 39 ggtgaaggag agtctgatcc tagaaatcca aaggcctgtc ctcggaattg tgatggaaga 900
 40 attgcctatg gaatttgccc actttcagaa gaaaagaaga atgatcggat atgcaccaat 960
 41 ggttgccgag gcaagaaggg ctgtaagtac tttagtgatg atggaacttt tatttgtgaa 1020
 42 ggagaatctg aatatgccag caaagtggat gaatatgttg gtgaagtgga gaatgatctc 1080
 43 cagaagtcta aggttgctgt ttcc 1104
 45 <210> SEQ ID NO: 2
 46 <211> LENGTH: 1360
 47 <212> TYPE: DNA
 48 <213> ORGANISM: Nicotiana alata

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49 <220> FEATURE:
50 <221> NAME/KEY: CDS
51 <222> LOCATION: (97)..(1200)
52 <400> SEQUENCE: 2
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54      tctctgcttg taagcaatgt ggaacatgca gatgcc aag gct tgt acc tta aac      114
55                               Lys Ala Cys Thr Leu Asn
56                               1           5
57      tgt gat cca aga att gcc tat gga gtt tgc ccg cgt tca gaa gaa aag      162
58      Cys Asp Pro Arg Ile Ala Tyr Gly Val Cys Pro Arg Ser Glu Glu Lys
59                               10          15          20
60      aag aat gat cgg ata tgc acc aac tgt tgc gca ggc acg aag ggt tgt      210
61      Lys Asn Asp Arg Ile Cys Thr Asn Cys Cys Ala Gly Thr Lys Gly Cys
62                               25          30          35
63      aag tac ttc agt gat gat gga act ttt gtt tgt gaa gga gag tct gat      258
64      Lys Tyr Phe Ser Asp Asp Gly Thr Phe Val Cys Glu Gly Glu Ser Asp
65          40          45          50
66      cct aga aat cca aag gct tgt acc tta aac tgt gat cca aga att gcc      306
67      Pro Arg Asn Pro Lys Ala Cys Thr Leu Asn Cys Asp Pro Arg Ile Ala
68          55          60          65          70
69      tat gga gtt tgc ccg cgt tca gaa gaa aag aag aat gat cgg ata tgc      354
70      Tyr Gly Val Cys Pro Arg Ser Glu Glu Lys Lys Asn Asp Arg Ile Cys
71                               75          80          85
72      acc aac tgt tgc gca ggc acg aag ggt tgt aag tac ttc agt gat gat      402
73      Thr Asn Cys Cys Ala Gly Thr Lys Gly Cys Lys Tyr Phe Ser Asp Asp
74                               90          95          100
75      gga act ttt gtt tgt gaa gga gag tct gat cct aga aat cca aag gct      450
76      Gly Thr Phe Val Cys Glu Gly Glu Ser Asp Pro Arg Asn Pro Lys Ala
77          105          110          115
78      tgt cct cgg aat tgc gat cca aga att gcc tat ggg att tgc cca ctt      498
79      Cys Pro Arg Asn Cys Asp Pro Arg Ile Ala Tyr Gly Ile Cys Pro Leu
80          120          125          130
81      gca gaa gaa aag aag aat gat cgg ata tgc acc aac tgt tgc gca ggc      546
82      Ala Glu Glu Lys Lys Asn Asp Arg Ile Cys Thr Asn Cys Cys Ala Gly
83          135          140          145          150
84      aaa aag ggt tgt aag tac ttt agt gat gat gga act ttt gtt tgt gaa      594
85      Lys Lys Gly Cys Lys Tyr Phe Ser Asp Asp Gly Thr Phe Val Cys Glu
86                               155          160          165
87      gga gag tct gat cct aaa aat cca aag gcc tgt cct cgg aat tgt gat      642
88      Gly Glu Ser Asp Pro Lys Asn Pro Lys Ala Cys Pro Arg Asn Cys Asp
89          170          175          180
90      gga aga att gcc tat ggg att tgc cca ctt tca gaa gaa aag aag aat      690
91      Gly Arg Ile Ala Tyr Gly Ile Cys Pro Leu Ser Glu Glu Lys Lys Asn
92          185          190          195
93      gat cgg ata tgc acc aac tgc tgc gca ggc aaa aag ggt tgt aag tac      738
94      Asp Arg Ile Cys Thr Asn Cys Cys Ala Gly Lys Lys Gly Cys Lys Tyr
95          200          205          210
96      ttt agt gat gat gga act ttt gtt tgt gaa gga gag tct gat cct aaa      786
97      Phe Ser Asp Asp Gly Thr Phe Val Cys Glu Gly Glu Ser Asp Pro Lys

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98      215      220      225      230
99      aat cca aag gct tgt cct cgg aat tgt gat gga aga att gcc tat ggg      834
100     Asn Pro Lys Ala Cys Pro Arg Asn Cys Asp Gly Arg Ile Ala Tyr Gly
101           235           240           245
102     att tgc cca ctt tca gaa gaa aag aag aat gat cgg ata tgc aca aac      882
103     Ile Cys Pro Leu Ser Glu Glu Lys Lys Asn Asp Arg Ile Cys Thr Asn
104           250           255           260
105     tgt tgc gca ggc aaa aag ggc tgt aag tac ttt agt gat gat gga act      930
106     Cys Cys Ala Gly Lys Lys Gly Cys Lys Tyr Phe Ser Asp Asp Gly Thr
107           265           270           275
108     ttt gtt tgt gaa gga gag tct gat cct aga aat cca aag gcc tgt cct      978
109     Phe Val Cys Glu Gly Glu Ser Asp Pro Arg Asn Pro Lys Ala Cys Pro
110           280           285           290
111     cgg aat tgt gat gga aga att gcc tat gga att tgc cca ctt tca gaa      1026
112     Arg Asn Cys Asp Gly Arg Ile Ala Tyr Gly Ile Cys Pro Leu Ser Glu
113           295           300           305           310
114     gaa aag aag aat gat cgg ata tgc acc aat tgt tgc gca ggc aag aag      1074
115     Glu Lys Lys Asn Asp Arg Ile Cys Thr Asn Cys Cys Ala Gly Lys Lys
116           315           320           325
117     ggc tgt aag tac ttt agt gat gat gga act ttt att tgt gaa gga gaa      1122
118     Gly Cys Lys Tyr Phe Ser Asp Asp Gly Thr Phe Ile Cys Glu Gly Glu
119           330           335           340
120     tct gaa tat gcc agc aaa gtg gat gaa tat gtt ggt gaa gtg gag aat      1170
121     Ser Glu Tyr Ala Ser Lys Val Asp Glu Tyr Val Gly Glu Val Glu Asn
122           345           350           355
123     gat ctc cag aag tct aag gtt gct gtt tcc taagtcctaa ctaataatat      1220
124     Asp Leu Gln Lys Ser Lys Val Ala Val Ser
125           360           365
126     gtagtctatg tatgaaacaa aggcattgccaa atatgctctg tcttgccctgt aatctgtaat      1280
127     atggtagtgg agctttttcca ctgcctgttt aataagaaat ggagcactag tttgttttag      1340
128     ttaaaaaaaaaa aaaaaaaaaa      1360
130 <210> SEQ ID NO: 3
131 <211> LENGTH: 368
132 <212> TYPE: PRT
133 <213> ORGANISM: Nicotiana alata
134 <400> SEQUENCE: 3
135     Lys Ala Cys Thr Leu Asn Cys Asp Pro Arg Ile Ala Tyr Gly Val Cys
136           1           5           10           15
137     Pro Arg Ser Glu Glu Lys Lys Asn Asp Arg Ile Cys Thr Asn Cys Cys
138           20           25           30
139     Ala Gly Thr Lys Gly Cys Lys Tyr Phe Ser Asp Asp Gly Thr Phe Val
140           35           40           45
141     Cys Glu Gly Glu Ser Asp Pro Arg Asn Pro Lys Ala Cys Thr Leu Asn
142           50           55           60
143     Cys Asp Pro Arg Ile Ala Tyr Gly Val Cys Pro Arg Ser Glu Glu Lys
144           65           70           75           80
145     Lys Asn Asp Arg Ile Cys Thr Asn Cys Cys Ala Gly Thr Lys Gly Cys
146           85           90           95
147     Lys Tyr Phe Ser Asp Asp Gly Thr Phe Val Cys Glu Gly Glu Ser Asp

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148          100          105          110
149    Pro Arg Asn Pro Lys Ala Cys Pro Arg Asn Cys Asp Pro Arg Ile Ala
150          115          120          125
151    Tyr Gly Ile Cys Pro Leu Ala Glu Glu Lys Lys Asn Asp Arg Ile Cys
152          130          135          140
153    Thr Asn Cys Cys Ala Gly Lys Lys Gly Cys Lys Tyr Phe Ser Asp Asp
154          145          150          155          160
155    Gly Thr Phe Val Cys Glu Gly Glu Ser Asp Pro Lys Asn Pro Lys Ala
156          165          170          175
157    Cys Pro Arg Asn Cys Asp Gly Arg Ile Ala Tyr Gly Ile Cys Pro Leu
158          180          185          190
159    Ser Glu Glu Lys Lys Asn Asp Arg Ile Cys Thr Asn Cys Cys Ala Gly
160          195          200          205
161    Lys Lys Gly Cys Lys Tyr Phe Ser Asp Asp Gly Thr Phe Val Cys Glu
162          210          215          220
163    Gly Glu Ser Asp Pro Lys Asn Pro Lys Ala Cys Pro Arg Asn Cys Asp
164          225          230          235          240
165    Gly Arg Ile Ala Tyr Gly Ile Cys Pro Leu Ser Glu Glu Lys Lys Asn
166          245          250          255
167    Asp Arg Ile Cys Thr Asn Cys Cys Ala Gly Lys Lys Gly Cys Lys Tyr
168          260          265          270
169    Phe Ser Asp Asp Gly Thr Phe Val Cys Glu Gly Glu Ser Asp Pro Arg
170          275          280          285
171    Asn Pro Lys Ala Cys Pro Arg Asn Cys Asp Gly Arg Ile Ala Tyr Gly
172          290          295          300
173    Ile Cys Pro Leu Ser Glu Glu Lys Lys Asn Asp Arg Ile Cys Thr Asn
174          305          310          315          320
175    Cys Cys Ala Gly Lys Lys Gly Cys Lys Tyr Phe Ser Asp Asp Gly Thr
176          325          330          335
177    Phe Ile Cys Glu Gly Glu Ser Glu Tyr Ala Ser Lys Val Asp Glu Tyr
178          340          345          350
179    Val Gly Glu Val Glu Asn Asp Leu Gln Lys Ser Lys Val Ala Val Ser
180          355          360          365
182 <210> SEQ ID NO: 4
183 <211> LENGTH: 24
184 <212> TYPE: PRT
185 <213> ORGANISM: Nicotiana alata
186 <400> SEQUENCE: 4
187    Lys Ala Cys Thr Leu Asn Cys Asp Pro Arg Ile Ala Tyr Gly Val Cys
188          1          5          10          15
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190          20
192 <210> SEQ ID NO: 5
193 <211> LENGTH: 58
194 <212> TYPE: PRT
195 <213> ORGANISM: Nicotiana alata
196 <400> SEQUENCE: 5
197    Asp Arg Ile Cys Thr Asn Cys Cys Ala Gly Thr Lys Gly Cys Lys Tyr
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199      Phe Ser Asp Asp Gly Thr Phe Val Cys Glu Gly Glu Ser Asp Pro Arg
200              20              25              30
201      Asn Pro Lys Ala Cys Thr Leu Asn Cys Asp Pro Arg Ile Ala Tyr Gly
202              35              40              45
203      Val Cys Pro Arg Ser Glu Glu Lys Lys Asn
204              50              55
206 <210> SEQ ID NO: 6
207 <211> LENGTH: 58
208 <212> TYPE: PRT
209 <213> ORGANISM: Nicotiana alata
210 <400> SEQUENCE: 6
211      Asp Arg Ile Cys Thr Asn Cys Cys Ala Gly Thr Lys Gly Cys Lys Tyr
212      1              5              10              15
213      Phe Ser Asp Asp Gly Thr Phe Val Cys Glu Gly Glu Ser Asp Pro Arg
214              20              25              30
215      Asn Pro Lys Ala Cys Pro Arg Asn Cys Asp Pro Arg Ile Ala Tyr Gly
216              35              40              45
217      Ile Cys Pro Leu Ala Glu Glu Lys Lys Asn
218              50              55
220 <210> SEQ ID NO: 7
221 <211> LENGTH: 58
222 <212> TYPE: PRT
223 <213> ORGANISM: Nicotiana alata
224 <400> SEQUENCE: 7
225      Asp Arg Ile Cys Thr Asn Cys Cys Ala Gly Lys Lys Gly Cys Lys Tyr
226      1              5              10              15
227      Phe Ser Asp Asp Gly Thr Phe Val Cys Glu Gly Glu Ser Asp Pro Lys
228              20              25              30
229      Asn Pro Lys Ala Cys Pro Arg Asn Cys Asp Gly Arg Ile Ala Tyr Gly
230              35              40              45
231      Ile Cys Pro Leu Ser Glu Glu Lys Lys Asn
232              50              55
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235 <211> LENGTH: 58
236 <212> TYPE: PRT
237 <213> ORGANISM: Nicotiana alata
238 <400> SEQUENCE: 8
239      Asp Arg Ile Cys Thr Asn Cys Cys Ala Gly Lys Lys Gly Cys Lys Tyr
240      1              5              10              15
241      Phe Ser Asp Asp Gly Thr Phe Val Cys Glu Gly Glu Ser Asp Pro Lys
242              20              25              30
243      Asn Pro Lys Ala Cys Pro Arg Asn Cys Asp Gly Arg Ile Ala Tyr Gly
244              35              40              45
245      Ile Cys Pro Leu Ser Glu Glu Lys Lys Asn
246              50              55
248 <210> SEQ ID NO: 9
249 <211> LENGTH: 58
250 <212> TYPE: PRT
251 <213> ORGANISM: Nicotiana alata

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VERIFICATION SUMMARY

PATENT APPLICATION: US/09/812,502

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Input Set : N:\Crf3\RULE60\09812502.raw

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L:344 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:16